AVO

REGD. TRADE MARK

Model 8 *Universal* AvoMeter

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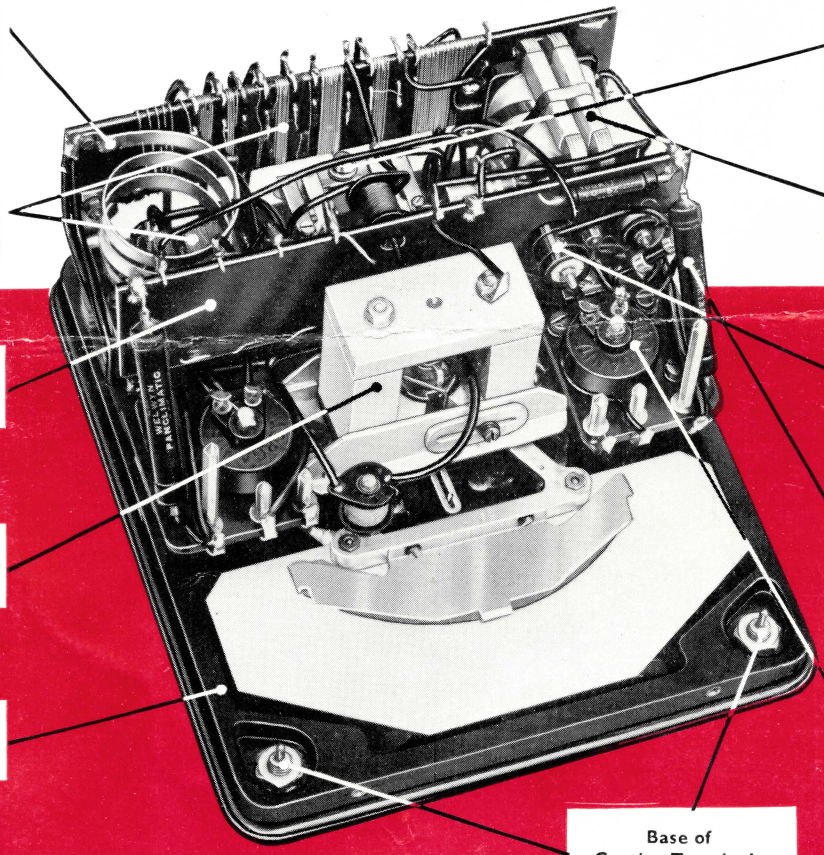
This multi-range instrument has been designed primarily for the Electronic, Radio and Television Engineer. It is a high sensitivity version of the Universal AvoMeter, incorporating the traditional design features of its predecessors, so highly valued for simplicity and portability, but with such additional features as: (1) Movement Reversing Button (for use when current and voltage polarities reverse with respect to a basic test position), (2) the wide range of resistance measurements which can be made by means of internal batteries, (3) the ability of the instrument to measure higher voltages, and (4) the provision of external accessories to extend the instrument's range.

The Model 8 incorporates the familiar "AVO" automatic cut-out mechanism and a decibel scale for audio frequency tests.

The provision of the maximum number of facilities within the smallest possible dimensions has been accomplished without prejudicing in any way the instrument's ability to meet British Standard Specification 89/1954 for Industrial Portable Instruments to the extent stated later.



Sensitivity

All d.c. voltage ranges are 20,000 ohms/volt and a.c. ranges 1,000 ohms/volt from the 100 V. range upwards. The 25, 10 and 2·5 V. a.c. ranges consume 4, 10 and 40 mA. respectively at full scale deflection. The potential drop measured at the terminals at full scale deflection is of the order of 0·5 V. for the higher d.c. current ranges and less than 0·25 V. for a.c.

Scaling

Four scales are provided, the outermost being marked for use with the resistance scales listed below. This is followed by two uniformly divided scales, marked 0–100 and 0–25, which are used on all current and voltage ranges. The innermost scale is marked in dB from −15 to +15. An anti-parallax mirror is provided to facilitate accurate readings.

Accuracy

D.C. VOLTAGE & CURRENT

VOLTAGE: 2 per cent. of the indication from full-scale to half-scale. 1 per cent. of the full-scale value below half-scale deflection.

CURRENT: Accuracy of indication on the d.c. current ranges is within the limit laid down in Section 6 of B.S. 89/1954 for 5 in. (127 mm.) scale-length Industrial Portable Instruments. **The limit is as follows: 1 per cent. of full-scale value over effective range.**

A.C. VOLTAGE & CURRENT

Accuracy of indication on the a.c. voltage and current ranges is within the limit laid down in Section 6 of B.S. 89/1954 for 5 in. (127 mm.) scale-length Industrial Portable Instruments. **The limit is as follows: 2·25 per cent. of full-scale value over effective range. (50-60 c/s).** The meter maintains a high degree of accuracy for audio frequency tests up to 10 kc/s on ranges up to 250 V.

RESISTANCE

Owing to the nature of the scale it is difficult to define the accuracy over its whole range. It may, however, be taken as being within 3 per cent. of the reading at the centre of the scale, increasing to 10 per cent. of the reading at deflections corresponding to 10 per cent. and 90 per cent. full-scale deflection.

The definition of effective range set down in B.S. 89/1954 is as follows when related to the AvoMeter:— **D.C.—From 0·1 of scale range to full-scale value.**
A.C.—From 0·25 of scale range to full-scale value.

Ranges

D.C.

VOLTAGE	CURRENT
0—2·5 V.	0—50 μA.
0—10 V.	0—250 μA.
0—25 V.	0—1 mA.
0—100 V.	0—10 mA.
0—250 V.	0—100 mA.
0—500 V.	0—1 A.
0—1,000 V.	0—10 A.
0—2,500 V.	

A.C.

VOLTAGE	CURRENT
0—2·5 V.	
0—10 V.	
0—25 V.	
0—100 V.	100 mA.
0—250 V.	1 A.
0—1,000 V.	2·5 A.
0—2,500 V.	10 A.

RESISTANCE (Adjustment for state of batteries is incorporated)

RANGE	FIRST INDICATION	MID-SCALE READING	REMARKS
0—2,000 Ω	0·5 Ω	20 Ω	Using internal 1·5 V. cell
0—200,000 Ω	50 Ω	2,000 Ω	Using internal 1·5 V. cell
0—20 M Ω	5,000 Ω	200,000 Ω	Using internal 15 V. midget battery
0—200 M Ω	50,000 Ω	2 M Ω	Using external d.c. voltage

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Protection

The instrument is provided with an automatic overload device which will give protection to the meter when subjected to reasonable, but not gross, overloads.

Movement Reverse

It sometimes happens that the measurement of d.c. voltages may be required both positive and negative to a reference point, or the flow of d.c. current may be reversed. To avoid the annoying operation of having to change over leads, a press button has been incorporated which reverses the direction of the current through the moving coil when required.

Leads and Prods

Special high voltage "AVO" leads with interchangeable metal clips, together with a pair of Long Reach Safety Clips Mk. 2, are provided.

Terminals

All ranges included on the switch knobs are obtainable through the two terminals at the base of the instrument. The high voltage ranges make use of the two terminals at the top of the meter.

Operation

If the range switches are simultaneously set to a.c. and d.c. ranges, electrical interlocking prevents the possibility of obtaining readings. The meter is capable of discriminating between a.c. and d.c. sources.

Safety Precautions

The instrument has been flash tested as prescribed by B.S.S. 89/1954 (6,000 V.). The test does not include the leads which are, however, well able to meet safety requirements.

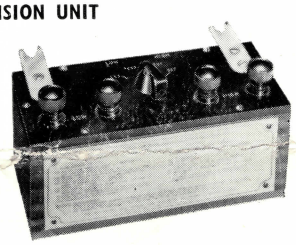
Approximate weight: $6\frac{1}{2}$ lb. (2·95 kg.)
Overall size: $8\frac{1}{8}$ in. × $7\frac{1}{4}$ in. × $4\frac{1}{2}$ in. (206 mm. × 184 mm. × 115 mm.)

A panclimatic version of this instrument (Model 8X) can be supplied.
Full details are given in the folder entitled "Panclimatic AvoMeters".

Accessories

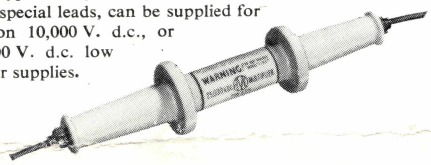
RESISTANCE RANGE EXTENSION UNIT

This useful device, complete with its own control switch and containing internal batteries, can be used to obtain two additional resistance ranges, 0–2·5Ω and 0–200MΩ, the limits of measurement being 200MΩ and 0·025Ω (in some cases this accessory is supplied less batteries).



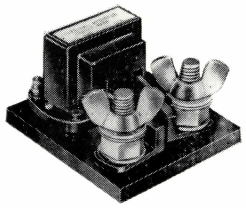
HIGH VOLTAGE D.C. MULTIPLIERS

Two types of high voltage multiplier, complete with special leads, can be supplied for use on 10,000 V. d.c., or 25,000 V. d.c. low power supplies.

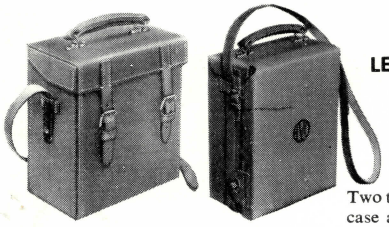


CURRENT TRANSFORMERS

50A., 100A., 200A., 200/50A. and 400A. transformers can be provided.



LEATHER CASES



Two types of carrying case are available :—

(a) The standard case (fitted with shoulder carrying strap) from which the instrument must be removed for use.

(b) The ever-ready case (fitted with shoulder carrying strap) which enables the instrument to be used whilst still retained in its carrying case.

Sole Proprietors and Manufacturers:

AVO LTD

Contractors to The Admiralty, War Office, Air Ministry, Ministry of Aviation, Atomic Research Establishments, Crown Agents for Oversea Governments and Administrations, and Electrical, Electronic, Radio and Telephone Manufacturers throughout the World.

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